

## **REMARKS**

### **I. Introduction**

The Office Action mailed July 10, 2009, has been carefully considered. The present Amendment is intended to be a complete response thereto and to place the case in condition for allowance.

Applicants gratefully acknowledge the courtesy of a personal interview on October 5, 2009, where the Examiner and Applicants' representative, Minh-Quan Pham, discussed the claims and the cited references. The Examiner agreed to reconsider the outstanding rejections.

### **II. Status of the Claims**

Claims 1-12 and 14-20 are pending. Claim 13 has been cancelled. Claim 7 has been amended to include all the limitations of cancelled claim 13.

### **III. Summary of the Office Action**

In the Office Action the Examiner rejected

- 1) claims 1-3 and 5-13 under 35 U.S.C. § 103(a) as being anticipated by Basol (U.S. Patent Application Publication No. 2004/0219730); and
- 2) claims 4 and 14-20 under 35 U.S.C. § 103(a) as being obvious over Basol in view of Kudas et al. (U.S. Patent Application Publication No. 2003/0108644).

### **IV. Arguments**

Applicants respectfully traverse the rejections for the following reasons:

Basol fails to disclose every element of the claimed invention. In particular, Basol fails to disclose that the binder has "a temperature of volatilization below the sintering temperature of

said metal or metal alloy powder” as recited in independent claims 1, 7, and 14. The Examiner alleges that Basol, in paragraph [0037], discloses “a binder having a temperature of volatilization below the sintering temperature of said metal or metal alloy powder.” Office Action, page 2. However, Applicants’ close scrutiny of the reference fails to reveal any disclosure of the volatilization temperature of the binder. Paragraph [0037], cited by Examiner, discloses as follows:

It is preferred that the carrier be a volatile material that once evaporated out of the wet micro-layer, leaves substantially no residue behind that would have deleterious effect on the compound film.

(emphasis added). Here, only the carrier is disclosed as being volatile and evaporated out of the wet micro-layer. In the same paragraph, the carrier is disclosed as being “a water-based or organic solvent,” which differs from the binder which is disclosed in that same paragraph as follows:

Well-known additives may then be added into the formulation to form either a thick paste (for screen printing) or a thin dispersion (for ink or slurry deposition). Examples of these additives include a large variety of ionic and non-ionic dispersants marketed by companies such as Rohm and Haas, thickening agents, pH-adjustment agents, surfactants, binders etc.

Accordingly, Basol does not disclose that the binder has a volatilization below the sintering temperature of said metal or metal alloy powder. The reference does not disclose volatilization of the binder at all. In the composition of Basol, only the carrier is disclosed as being volatile and evaporated from the composition. Therefore, Basol fails to disclose every limitation of the claimed invention.

Further, the Examiner fails to provide a rationale for one of ordinary skill in the art to modify Basol’s composition to arrive at the present invention, i.e. why would one of ordinary

skill in the art use a binder that has a temperature of volatilization below the sintering temperature of the metal or metal alloy powders. Therefore, the Examiner has failed to set out a *prima facie* case of obviousness.

In the Office Action, the Examiner alleges that it would have been obvious for one of ordinary skill in the art to use the composition of Basol to “form an interconnect” because

Basol teaches a method of adding a thin layer of metallic nano-particles for electrical devices, where adding a thin layer of metallic nano-particles would be advantageous to minimize the size of an interconnect.

Page 3. Applicants respectfully submit that this rationale completely ignores the purpose of Basol’s compositions and methods. Basol discloses a semiconductor film layer and methods for forming that layer. *See, e.g.*, abstract, and paragraph [0017]. A highly desirable property of an electrical interconnect is its high conductivity. A semi-conductor by its nature makes a very poor electrically interconnect, because of its relatively poor conductivity (hence it is called a “semi-conductor”). One of ordinary skill in the art would never use a semi-conductor as an electrical interconnect.

Moreover, the combination of Basol with Kudas et al. also fails to render the presently claimed invention obvious. The Examiner relies on Kudas et al. to disclose fish oil as a dispersant. However, because Kudas et al. do not cure the deficiency of Basol, as discussed above, the combination of the references still does not render the present invention obvious within the meaning of 35 U.S.C. § 103.

Additionally, with regard to claims 7, 10, and 12, the Examiner alleges that “Basol teaches a method comprising the step of: sintering (§ 0040) silver (§ 0041) particles of a particle size less than about 200 nm.” Applicants respectfully submit that this allegation is a clear

misreading of Basol. Nowhere in the reference does Basol disclose metallic silver. Paragraph [0041] of the reference, which the Examiner specifically cited to support his assertion, recites:

Although a  $\text{Cu(In,Ga)(S,Se)}_2$  compound is used as an example, other compounds in the same family (such as compounds containing Al, Tl, Ag and/or Te) may also be formed using the present invention.

(emphasis added). Applicants respectfully submit that “compounds containing ... Ag” are not the same as metallic silver. Chemically, a “compound” is a substance formed by a reaction between two or more elements. Here, a compound containing silver is produced by a reaction between silver and another element. That is not the same as metallic silver, which is an element, not a compound. Thus, the Examiner has confused a compound containing silver with elemental silver. That distinction would be clear to one skilled in the art. Therefore, contrary to the Examiner’s allegation, Basol fails to disclose metallic silver particles.

Therefore, for the reasons noted, Applicants respectfully submit that the cited references, taken individually or in combination, cannot render the presently claimed invention obvious within the meaning of 35 U.S.C. § 103. Accordingly, withdrawal of the rejection is earnestly solicited.

## **V. Conclusion**

Applicants have responded to the Office Action mailed July 10, 2009. All pending claims are now believed to be allowable and favorable action is respectfully requested.

In the event that there are any questions relating to this Amendment or to the application in general, it would be appreciated if the examiner would telephone the undersigned attorney concerning such questions so that the prosecution of this application may be expedited.

Please charge any shortage or credit any overpayment of fees to BLANK ROME LLP, Deposit Account No. 23-2185 (124617-00118). In the event that a petition for an extension of time is required to be submitted herewith and in the event that a separate petition does not accompany this response, Applicants hereby petition under 37 C.F.R. 1.136(a) for an extension of time for as many months as are required to render this submission timely.

Any fees due are authorized above.

Respectfully submitted,

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